

## Title (en)

ZIRCONIUM PRETREATMENT COMPOSITIONS CONTAINING MOLYBDENUM, ASSOCIATED METHODS FOR TREATING METAL SUBSTRATES, AND RELATED COATED METAL SUBSTRATES

## Title (de)

ZIRKONIUMVORBEHANDLUNGSZUSAMMENSETZUNG MIT MOLYBDÄN, ZUGEHÖRIGE VERFAHREN ZUR BEHANDLUNG VON METALLSUBSTRATEN UND ZUGEHÖRIGE BESCHICHTETE METALLSUBSTRATE

## Title (fr)

COMPOSITIONS DE PRÉTRAITEMENT DE ZIRCONIUM CONTENANT DU MOLYBDÈNE, PROCÉDÉS ASSOCIÉS DE TRAITEMENT DE SUBSTRATS MÉTALLIQUES ET SUBSTRATS MÉTALLIQUES REVÊTUS ASSOCIÉS

## Publication

**EP 3293287 A1 20180314 (EN)**

## Application

**EP 17193693 A 20130816**

## Priority

- FR 1258080 A 20120829
- EP 13756764 A 20130816

## Abstract (en)

Disclosed are pretreatment compositions and associated methods for treating metal substrates with pretreatment compositions, including ferrous substrates, such as cold rolled steel and electrogalvanized steel. The pretreatment composition includes: a Group IIIB and/or IVB metal; free fluoride; and molybdenum. The methods include contacting the metal substrates with the pretreatment composition.

## IPC 8 full level

**C23C 22/44** (2006.01); **C23C 22/83** (2006.01); **C25D 13/02** (2006.01); **C25D 13/20** (2006.01)

## CPC (source: EP KR RU US)

**C23C 22/34** (2013.01 - EP RU US); **C23C 22/44** (2013.01 - EP RU US); **C23C 22/48** (2013.01 - KR); **C23C 22/78** (2013.01 - KR); **C23C 22/83** (2013.01 - EP RU US); **C25D 13/00** (2013.01 - EP KR RU US); **C25D 13/02** (2013.01 - RU US); **C25D 13/20** (2013.01 - EP KR RU US); **Y10T 428/12812** (2015.01 - EP US)

## Citation (applicant)

- US 2010159258 A1 20100624 - RAKIEWICZ EDWARD F [US], et al
- US 5653823 A 19970805 - MCMILLEN MARK W [US], et al
- US 3912548 A 19751014 - FAIGEN HARRY L
- US 5328525 A 19940712 - MUSINGO EDWARD M [US], et al
- US 5662746 A 19970902 - AFFINITO JOHN C [US]
- WO 9533869 A1 19951214 - HENKEL CORP [US], et al
- CA 2087352 A1 19940102 - BETZ LABORATORIES [US], et al
- US 5449415 A 19950912 - DOLAN SHAWN E [US]
- US 2004163736 A1 20040826 - MATSUKAWA MASAHICO [JP], et al
- US 5209788 A 19930511 - MCMILLEN MARK W [US], et al
- US 5149382 A 19920922 - GRAY RALPH C [US]
- US 3749657 A 19730731 - LE BRAS L, et al
- US 3663389 A 19720516 - KORAL JERRY NORMAN, et al
- US 3984299 A 19761005 - JERABEK ROBERT D
- US 3947338 A 19760330 - JERABEK ROBERT D, et al
- US 3947339 A 19760330 - JERABEK ROBERT D, et al
- US 4134866 A 19790116 - TOMINAGA AKIRA, et al
- DE 2707405 A1 19780126 - VIANOVA KUNSTHARZ AG
- US 3455806 A 19690715 - SPOOR HERBERT, et al
- US 3928157 A 19751223 - SUEMATSU YASUO, et al
- US 3962165 A 19760608 - BOSSO JOSEPH F, et al
- US 3975346 A 19760817 - BOSSO JOSEPH F, et al
- US 4001101 A 19770104 - BOSSO JOSEPH F, et al
- US 3793278 A 19740219 - BONA B
- US 3984922 A 19761012 - ROSEN LEO
- EP 0012463 A1 19800625 - SHELL INT RESEARCH [NL]
- US 4134932 A 19790116 - KEMPTER FRITZ E, et al
- US 4116900 A 19780926 - BELANGER WILLIAM J
- US 6875800 B2 20050405 - VANIER NOEL R [US], et al
- US 2005287348 A1 20051229 - FALER DENNIS L [US], et al
- US 48216703 P 20030624
- US 33706206 A 20060120
- US 6894086 B2 20050517 - MUNRO CALUM H [US], et al
- US 89291904 A 20040716

## Citation (search report)

- [Y] JP 2005264230 A 20050929 - NIHON PARKERIZING, et al
- [Y] US 2008145678 A1 20080619 - MCMURDIE NEIL D [US], et al
- [Y] US 2009032144 A1 20090205 - MCMILLEN MARK W [US], et al
- [Y] JP 2004183015 A 20040702 - NIHON PARKERIZING

## Cited by

CN112639173A; WO2020046972A1

## Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

## DOCDB simple family (publication)

**WO 2014035691 A1 20140306;** AU 2013309270 A1 20150319; AU 2013309270 B2 20160317; BR 112015004358 A2 20170704;  
BR 112015004358 A8 20190813; BR 112015004358 B1 20210525; CA 2883180 A1 20140306; CA 2883180 C 20171205;  
CN 104718312 A 20150617; CN 104718312 B 20170315; EP 2890830 A1 20150708; EP 2890830 B1 20180627; EP 3293287 A1 20180314;  
ES 2686538 T3 20181018; HK 1207889 A1 20160212; HU E039960 T2 20190228; IN 1537DEN2015 A 20150703; KR 102125110 B1 20200619;  
KR 20150040377 A 20150414; KR 20160079938 A 20160706; MX 2015002598 A 20150929; MX 366127 B 20190627;  
PL 2890830 T3 20190131; RU 2015111242 A 20161020; RU 2611610 C2 20170228; SG 11201501408R A 20150330; UA 112024 C2 20160711;  
US 10125424 B2 20181113; US 10920324 B2 20210216; US 2015225855 A1 20150813; US 2019040530 A1 20190207

DOCDB simple family (application)

**US 2013055354 W 20130816;** AU 2013309270 A 20130816; BR 112015004358 A 20130816; CA 2883180 A 20130816;  
CN 201380052665 A 20130816; EP 13756764 A 20130816; EP 17193693 A 20130816; ES 13756764 T 20130816; HK 15108470 A 20150831;  
HU E13756764 A 20130816; IN 1537DEN2015 A 20150224; KR 20157007778 A 20130816; KR 20167017558 A 20130816;  
MX 2015002598 A 20130816; PL 13756764 T 20130816; RU 2015111242 A 20130816; SG 11201501408R A 20130816;  
UA A201502771 A 20130816; US 201314424898 A 20130816; US 201816153100 A 20181005